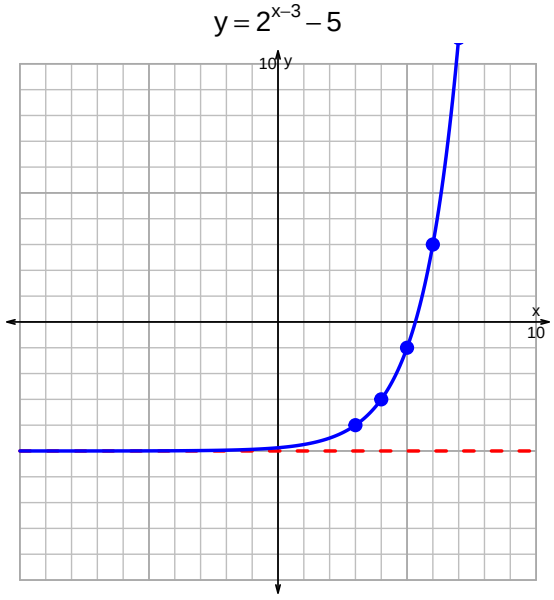
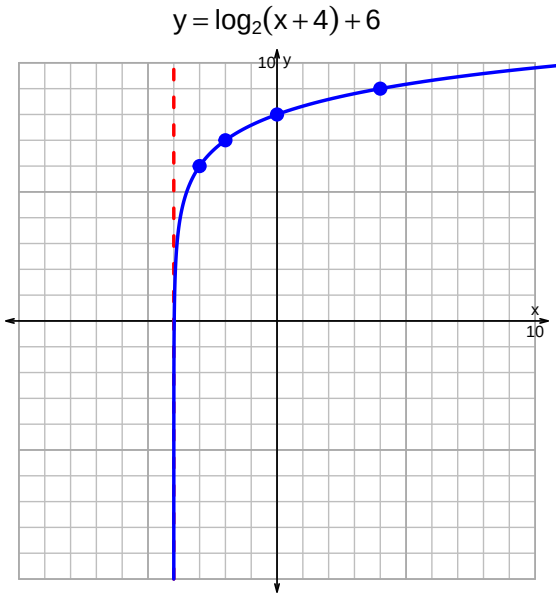
Name: Date:

S18QUIZ: EXP LOG (SLTN v277)

1. Graph $y = 2^{x-3} - 5$ and $y = \log_2(x+4) + 6$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-19 = \left(\frac{-7}{3}\right) \cdot 10^{-4t/5}$$

Divide both sides by $\frac{-7}{3}$.

$$\frac{19 \cdot 3}{7} = 10^{-4t/5}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{19 \cdot 3}{7}\right) = \frac{-4t}{5}$$

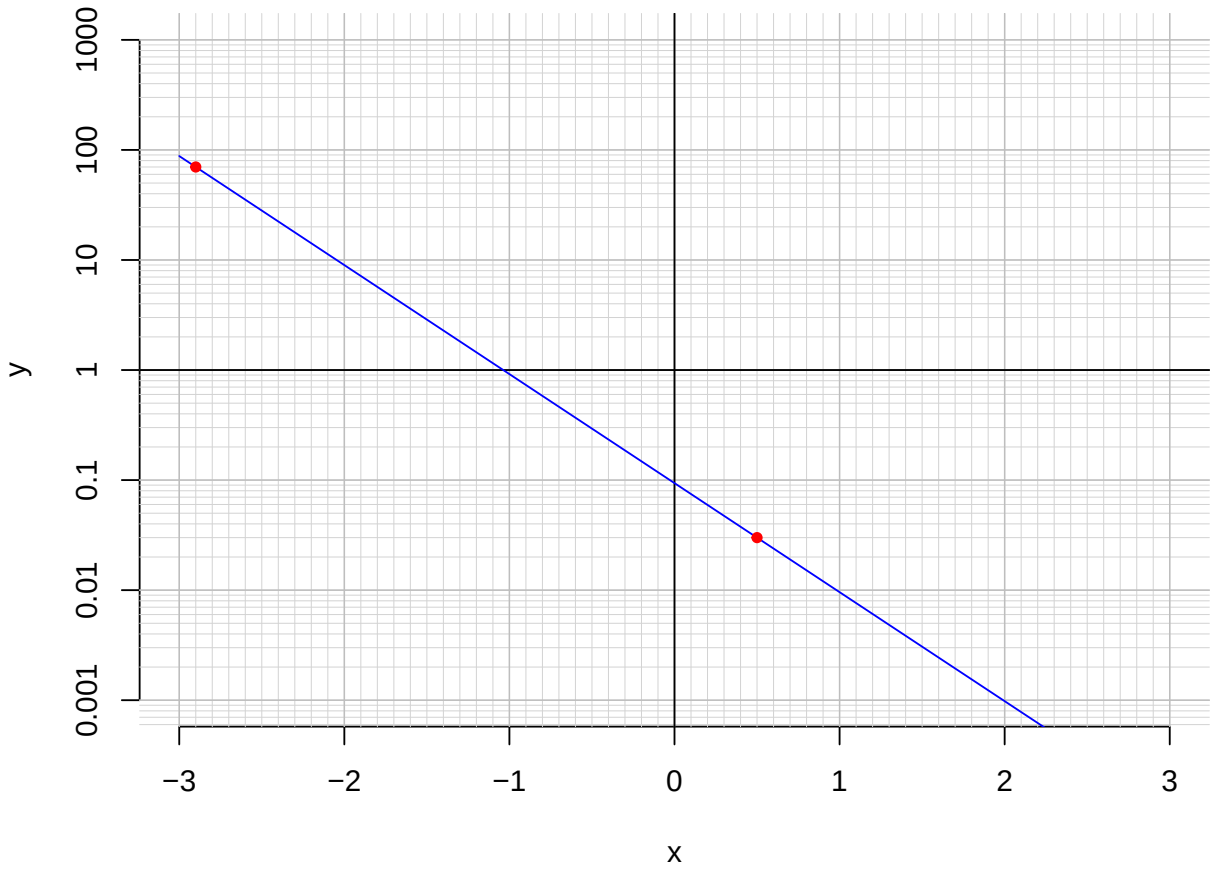
Divide both sides by $\frac{-4}{5}$.

$$\frac{-5}{4} \cdot \log_{10}\left(\frac{19 \cdot 3}{7}\right) = t$$

Switch sides.

$$t = \frac{-5}{4} \cdot \log_{10}\left(\frac{19 \cdot 3}{7}\right)$$

3. An exponential function $f(x) = 0.0938 \cdot e^{-2.28x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(0.5)$.

$$f(0.5) = 0.03$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{2.28} \cdot \ln\left(\frac{x}{0.0938}\right)$$

c. Using the plot above, evaluate $f^{-1}(70)$.

$$f^{-1}(70) = -2.9$$